



NOTES

SUBSTANCE USE & RELATED DISORDERS

GENERALLY, WHAT ARE THEY?

PATHOLOGY & CAUSES

- Maladaptive pattern of substance use
- **Dependence:** inability to feel “normal” without using substance
- **Addiction:** compulsive substance use to achieve reward stimuli, despite negative effects
- Continued consumption causes tolerance
 - Receptors become less sensitive, or neurons have fewer receptors (downregulation)
 - Must consume more of substance to feel desired effect (positive reinforcement)
- Stopping use causes withdrawal
 - Body predictively counters consumption symptoms; no consumption = nothing to counter
 - Must consume more to avoid discomfort (negative reinforcement)
- Possibly fatal complications (e.g. cancer, heart attack, overdose)

SIGNS & SYMPTOMS

- Increased tolerance
- Upon withdrawal
 - Anxiety, depression, irritability, fatigue, tremors, palpitations, clammy skin, dilated pupils, sweating, headaches, difficulty sleeping, vomiting, seizures, changes in vital signs

DIAGNOSIS

OTHER DIAGNOSTICS

- $\geq$ two of following
 - Consuming more of a substance than intended
 - Inability to cut down
 - Use takes up a lot of time
 - Cravings
 - Use affects responsibilities
 - Using in spite of social problems caused
 - Use replaces important activities
 - Using in physically dangerous situations
 - Using even if it worsens a problem
 - Developing tolerance
 - Feeling withdrawal symptoms
- Mild = 2–3 symptoms, moderate = 4–5 symptoms, severe = $\geq$ 6 symptoms

TREATMENT

MEDICATIONS

- To reduce cravings, mimic substance, or change its effects

PSYCHOTHERAPY

- E.g. motivational interviewing, cognitive behavioral therapy, peer-support programs

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ALCOHOL USE DISORDER

osms.it/alcohol-use-disorder

PATHOLOGY & CAUSES

- Inability to feel “normal” without alcohol
- **Alcohol use disorder**: maladaptive pattern of alcohol consumption
- Alcohol = depressant
- Develop alcohol tolerance
 - GABA, glutamate, dopamine, serotonin receptors become less sensitive/neurons have fewer receptors (downregulation)
 - Must drink more to feel euphoric (positive reinforcement)
- **Withdrawal**

COMPLICATIONS

- Heart damage (dilated cardiomyopathy, arrhythmias, stroke), liver damage (steatosis, steatohepatosis, fibrosis, cirrhosis), pancreatitis, cancers (mouth, esophagus, throat, liver, breast), death by overdose (cardiac, respiratory depression)

SIGNS & SYMPTOMS

- Increased alcohol tolerance
- Upon withdrawal
 - Anxiety, depression, irritability, fatigue, tremors, palpitations, clammy skin, dilated pupils, sweating, headaches, difficulty sleeping, vomiting, seizures
 - Delirium tremens (high fever, hallucinations, intense agitation)



MNEMONIC: CANs of beer

Wernicke-Korsakoff triad

Confusion
Ataxia
Nystagmus

DIAGNOSIS

OTHER DIAGNOSTICS

- $\geq$ two of following
 - Consuming **more alcohol** than intended
 - **Inability to cut down**
 - Alcohol use takes up a lot of **time**
 - **Cravings** to use alcohol
 - Alcohol use **affects responsibilities**
 - Using alcohol despite **social problems**
 - **Giving up important activities** for alcohol
 - Using alcohol in **dangerous situations**
 - Using alcohol even if worsens a problem
 - **Becoming tolerant** to alcohol
 - Withdrawal symptoms
- Mild = 2–3 symptoms, moderate = 4–5 symptoms, severe = $\geq$ six symptoms

TREATMENT

MEDICATIONS

- Naltrexone (reduces cravings), acamprosate (stabilizes withdrawal), disulfiram (increases ethanol sensitivity)

PSYCHOTHERAPY

- Motivational interviewing, cognitive behavioral therapy, peer-support programs



MNEMONIC: COAT RACK

Wernicke's encephalopathy

Confusion
Ophthalmoplegia
Ataxia
Thiamine tx.

Korsakoff's psychosis

Retrograde amnesia
Anterograde amnesia
Confabulation
Korsakoff's psychosis

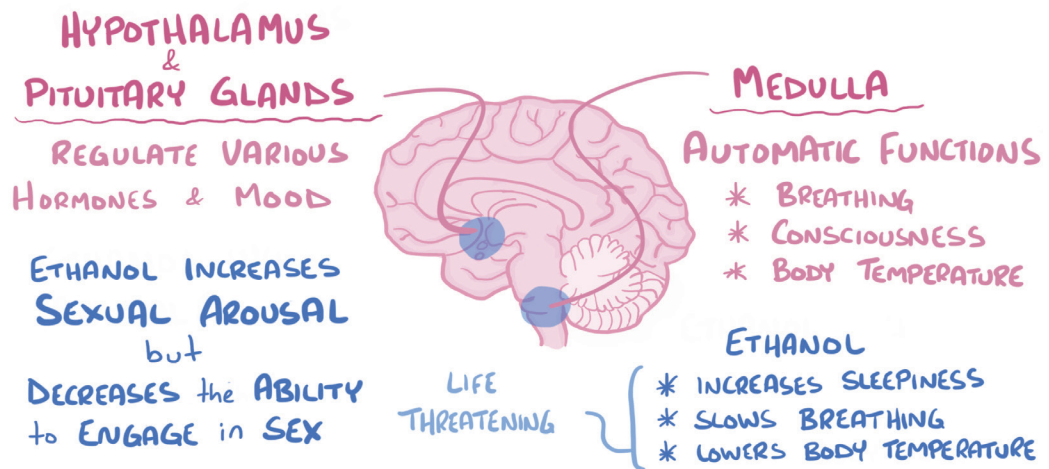


Figure 104.1 Illustration showing alcohol's effects on the hypothalamus, pituitary glands, and medulla.

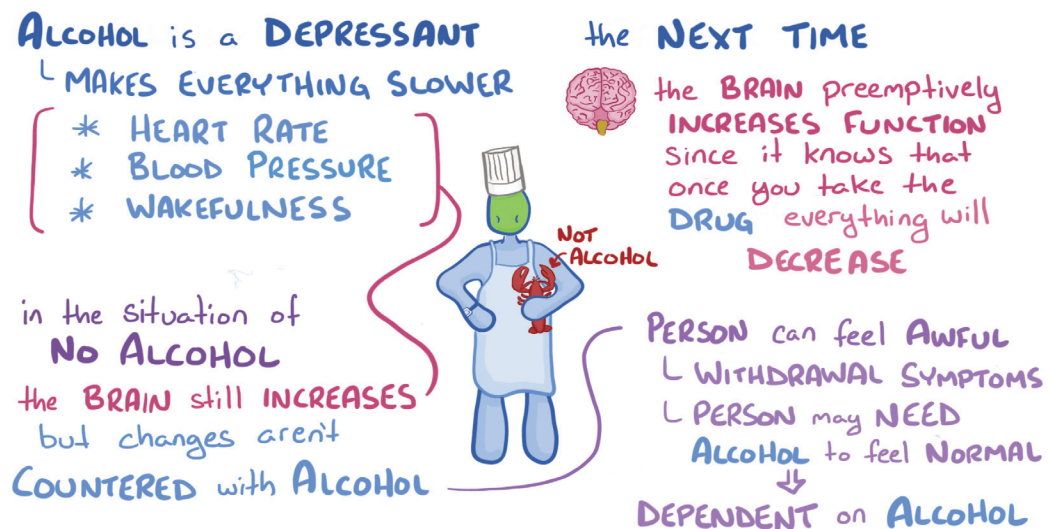


Figure 104.2 Illustration showing the effects of alcohol withdrawal.

CANNABIS DEPENDENCE

osms.it/cannabis_dependence

PATHOLOGY & CAUSES

- Inability to feel "normal" without cannabis
- Cannabis use disorder: maladaptive pattern of cannabis use
- Cannabis = depressant/stimulant
- Continued cannabis use causes tolerance
 - Cannabinoid receptors become less sensitive/neurons have fewer receptors (downregulation)
 - Must consume more to feel euphoric (positive reinforcement)
- Withdrawal

COMPLICATIONS

- Anxiety, depression, psychotic disorders (e.g. schizophrenia), hyper-inflated lungs (when smoking cannabis), chronic bronchitis, respiratory infections, heart attacks, strokes
- Teenagers at higher risk (developing brain more sensitive)

SIGNS & SYMPTOMS

- Increased cannabis tolerance
- Upon withdrawal
 - Cravings, irritability, anxiety, difficulty sleeping

DIAGNOSIS

OTHER DIAGNOSTICS

- $\geq$ two of following
 - Consuming more cannabis than intended
 - Inability to cut down
 - Cannabis use takes up a lot of time
 - Cravings to use cannabis
 - Cannabis use affects responsibilities
 - Using cannabis despite social problems

- Giving up important activities for cannabis
- Using cannabis in dangerous situations
- Using cannabis even if it worsens a problem
- Becoming tolerant to cannabis
- Withdrawal symptoms
- Mild = 2–3 symptoms, moderate = 4–5 symptoms, severe = $\geq$ six symptoms

TREATMENT

PSYCHOTHERAPY

- Motivational interviewing

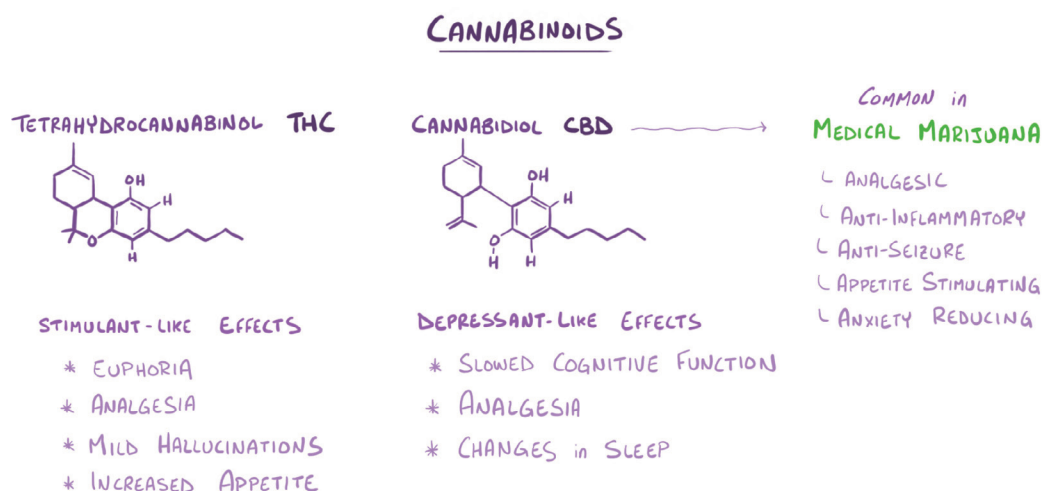


Figure 104.3 Illustration showing the stimulant effects of tetrahydrocannabinol (THC) versus the depressant effects of cannabidiol (CBD). CBD's properties mean it can be used medicinally in some cases.

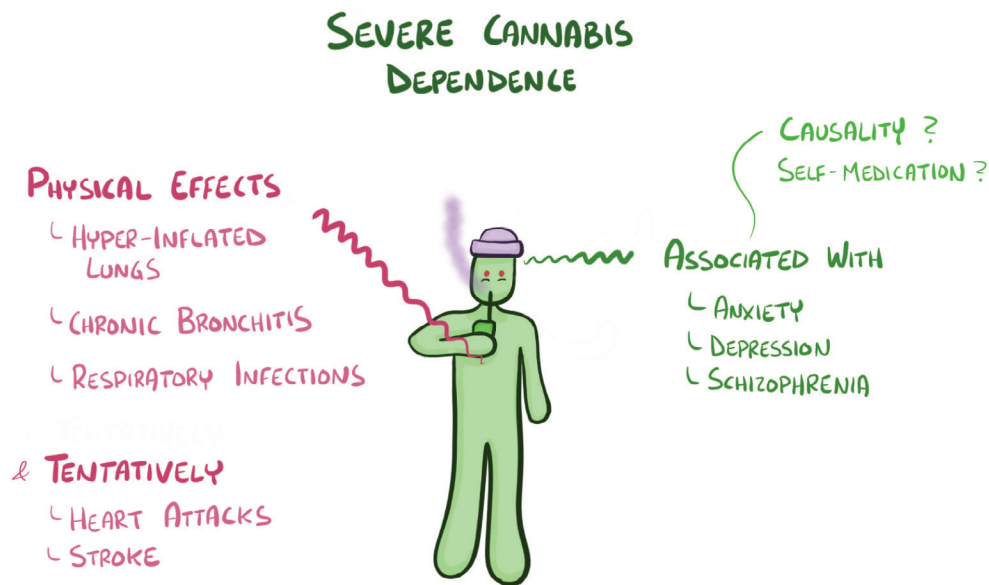


Figure 104.4 Illustration showing the potential physical and mental effects of severe cannabis dependence.

COCAINE DEPENDENCE

osms.it/cocaine-dependence

PATHOLOGY & CAUSES

- Inability to feel “normal” without cocaine
- **Stimulant use disorder**: maladaptive pattern of stimulant use
- Cocaine = stimulant
- Continued cocaine use causes tolerance
 - Dopaminergic receptors become less sensitive/neurons have fewer receptors (downregulation)
 - Must consume more to feel euphoric (positive reinforcement)
- Withdrawal

COMPLICATIONS

- Hyperthermia, seizures, stroke, brain hemorrhage, heart attack, death by overdose

SIGNS & SYMPTOMS

- Increased cocaine tolerance
- Upon withdrawal
 - Depression, anxiety, fatigue, reduced concentration, cravings, tiredness, increased appetite, excessive sleeping, vivid dreaming, suicidal ideation, nausea, vomiting, hallucinations

DIAGNOSIS

OTHER DIAGNOSTICS

- ≥ two of following
 - Consuming more stimulants than intended
 - Inability to cut down
 - Stimulant use takes up a lot of time
 - Cravings to use stimulants
 - Stimulant use affects responsibilities

- Using stimulants despite social problems
- Giving up important activities for stimulants
- Using stimulants in dangerous situations
- Using stimulants even if they worsen a problem
- Becoming tolerant to stimulants
- Withdrawal symptoms
- Mild = 2–3 symptoms, moderate = 4–5 symptoms, severe ≥ six symptoms

TREATMENT

MEDICATIONS

- Modafinil (stimulates, reduces cravings)

PSYCHOTHERAPY

- Motivational interviewing, peer-support programs



Figure 104.6 An individual with a perforated nasal septum secondary to cocaine abuse. Cocaine causes vasoconstriction and ischemic necrosis. The hole has been closed with a translucent silicone button to provide structural support.

WITHDRAWAL SYMPTOMS

MILD SYMPTOMS

MOSTLY PSYCHOLOGICAL

DEPRESSION
ANXIETY
FATIGUE
REDUCED
CONCENTRATION
CRAVINGS
TIREDNESS
INCREASED APPETITE
EXCESSIVE SLEEPING
VIVID DREAMING
(↑ REM)



WORST SYMPTOMS

AFTER HABITUAL USE

"CRASH"

SUICIDAL IDEATION
NAUSEA
VOMITING
SENSATION of
INSECTS on
SKIN

Figure 104.5 Illustration showing the symptoms of cocaine withdrawal.

KEEP PERSON PHYSICALLY SAFE
PROTECT THEIR AIRWAY
MAKE SURE BLOOD IS CIRCULATING
GIVE A SEDATIVE
* DIAZEPAM
* LORAZEPAM
COOL THE BODY w/ COOL COMPRESS or FAN

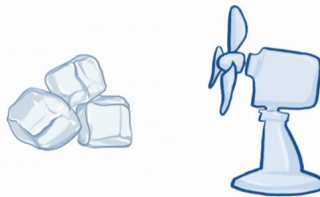


Figure 104.7 Illustration showing some of the recommended approaches to immediate treatment of someone experiencing a cocaine overdose.

OPIOID DEPENDENCE

osms.it/opioid-dependence

PATHOLOGY & CAUSES

- Inability to feel “normal” without opioid use
- **Opioid use disorder:** maladaptive pattern of opioid use
- Opioids = depressants
- Continued opioid use causes tolerance
 - Opioid receptors become less sensitive, /neurons have fewer receptors (downregulation)
 - Must use more to feel euphoric (positive reinforcement)
- **Withdrawal**

COMPLICATIONS

- Disease transmission from shared needles, death by overdose (cardiac, respiratory depression)

SIGNS & SYMPTOMS

- Increased opioid tolerance
- Upon withdrawal
 - Anxiety, shivering, tremors, yawning, body aches, sweating, runny nose, abdominal cramps, diarrhea, vomiting, increased heart rate, blood pressure

DIAGNOSIS

OTHER DIAGNOSTICS

- **≥ two** of following
 - Consuming **more** opioids than intended
 - Inability to cut down
 - Opioid use takes up a lot of **time**
 - **Cravings** to use opioids
 - Opioid use **affects** responsibilities

- Using opioids despite social problems
- Giving up important activities for opioids
- Using opioids in dangerous situations
- Using opioids even if they worsen a problem
- Becoming tolerant to opioids
- Withdrawal symptoms
- Mild = 2–3 symptoms, moderate = 4–5 symptoms, severe = $\geq$ six symptoms

TREATMENT

MEDICATIONS

- Naloxone (blocks opioids), naltrexone, methadone (opioid for maintenance/tapering consumption), buprenorphine

PSYCHOTHERAPY

- Motivational interviewing, peer-support programs, cognitive behavioral therapy

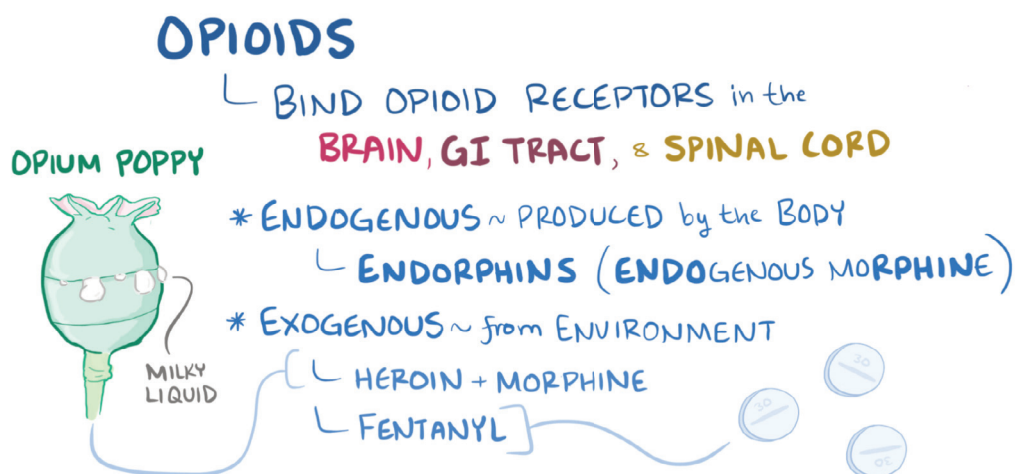


Figure 104.8 Illustration with examples of endogenous and exogenous opioids.

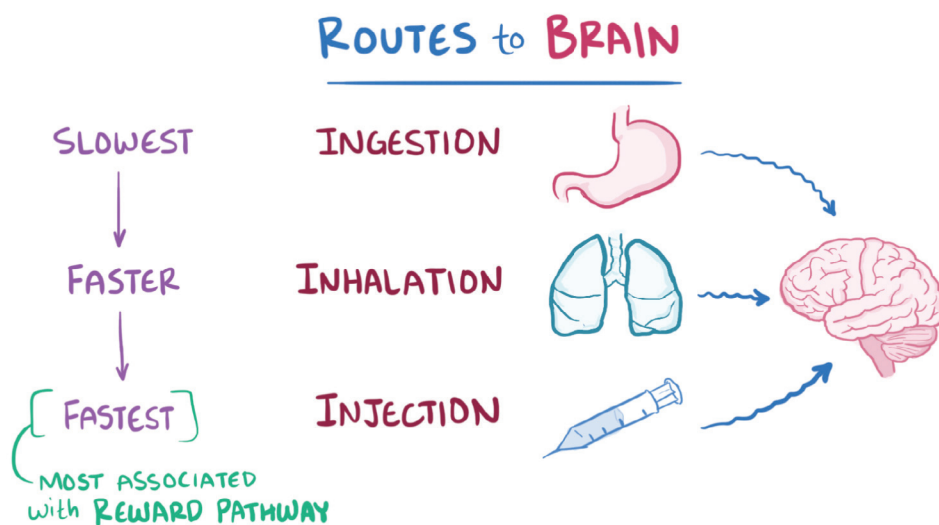


Figure 104.9 Illustration showing the ways opioids are most commonly self-administered by people with opioid use disorder.

TOBACCO DEPENDENCE

osms.it/tobacco-dependence

PATHOLOGY & CAUSES

- Inability to feel “normal” without tobacco use (nicotine)
- Tobacco use disorder: maladaptive pattern of tobacco use
- Tobacco = depressant, stimulant
- Continued tobacco use causes tolerance
 - Nicotinic receptors become less sensitive/neurons have fewer receptors (downregulation)
 - Must use more to feel euphoric (positive reinforcement)
- Withdrawal

COMPLICATIONS

- Heart attack, stroke, peripheral vascular disease, pulmonary disease, cancer (mouth, throat, lungs, bladder, pancreas, uterus)

SIGNS & SYMPTOMS

- Increased tobacco tolerance
- Upon withdrawal
 - Cravings, irritability, anxiety, anger, poor concentration, restlessness, impatience, increased appetite, weight gain, insomnia

DIAGNOSIS

OTHER DIAGNOSTICS

- $\geq$ two of following
 - Consuming more tobacco than intended
 - Inability to cut down
 - Tobacco use takes up a lot of time
 - Cravings to use tobacco
 - Tobacco use affects responsibilities
 - Using tobacco despite social problems
 - Giving up important activities for tobacco

- Using tobacco in dangerous situations
- Using tobacco even if it worsens a problem
- Becoming tolerant to tobacco
- Withdrawal symptoms
- Mild = 2–3 symptoms, moderate = 4–5 symptoms, severe = $\geq$ six symptoms



Figure 104.10 An individual with tar stained fingers caused by tobacco smoking.

TREATMENT

MEDICATIONS

- Nicotine replacement therapies (gum, sprays, patches) to taper dose
- Bupropion (antidepressant; reduces cravings, withdrawal symptoms), varenicline (reduces cravings, enjoyment of tobacco)

PSYCHOTHERAPY

- Motivational interviewing, peer-support programs

OTHER INTERVENTIONS

- Switch to electronic cigarettes

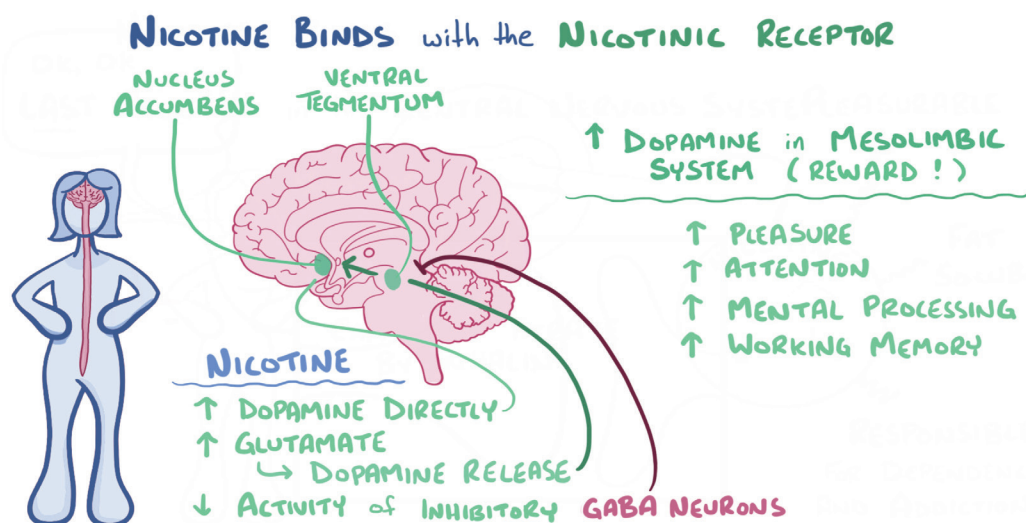


Figure 104.11 Illustration showing the effects of nicotine on the brain after binding to nicotinic receptors.

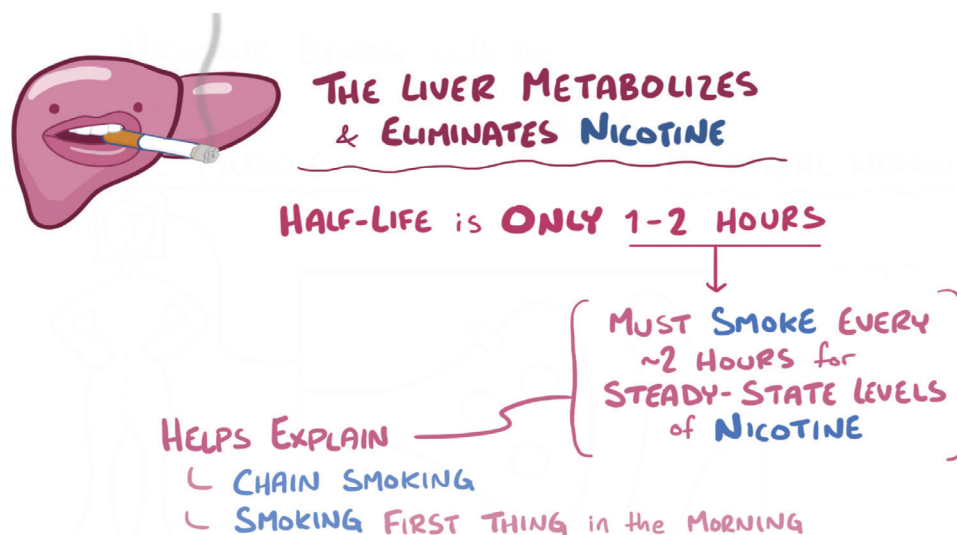


Figure 104.12 Illustration showing the half-life of nicotine, which can lead to chain smoking.

SUBSTANCE ABUSE ACUTE INTOXICATION

	SIGNS & SYMPTOMS	TREATMENT
ALCOHOL	Severe confusion, stupor, lapses of consciousness, vomiting, seizures, respiratory depression, bluish, cold, clammy skin	Fomepizole
CANNABIS	Conjunctival injection, drowsiness, euphoria, nausea, hypertension, tachycardia, tachypnea, tremors, slurred speech, acute psychosis, agitation, urinary retention	-
COCAINE	Altered mental status, seizure, hypertension, chest pain, dyspnea, epistaxis, mydriasis, blurring vision, restless, severe agitation	Benzodiazepines
OPIOIDS	Triad of: CNS depression, respiratory depression, pupillary miosis	Naloxone
TOBACCO	Abdominal pain, pallor, sweating, hypertension, tachycardia, ataxia, tremor, headache, fasciculations, seizures; then depressor state of CNS depression, respiratory failure, bradycardia	Activated charcoal
LYSERGIC ACID DIETHYLAMIDE (LSD)	"Bad trip"; panic reaction, self aggression, suicidal/homicidal ideation, hallucinations, mydriasis, hypertension, tachycardia, flushing, sweating	-
PHENYLCHLOHEXYL PIPERIDINE (PCP)	Violent, fluctuating behavior, nystagmus, motor disturbance, autonomic stimulation; nystagmus, tachycardia, tachypnea, salivation, flushing, diaphoresis	Activated charcoal, Benzodiazepines
BENZODIAZEPINES	Nystagmus, hallucinations, slurred speech, ataxia, coma, respiratory depression, hypotension, paradoxical agitation	Activated charcoal, Flumazenil